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Appl: Jow et al

Filed: 7/24/2003

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Attachments

Attached hereto is a declaration of T. Richard Jow submitted under 37 CFR 1.132 providing evidence as to the improved performance of a mixed bis(oxalato) borate-oxalyldifluoroborate additive salt combination as compared to each additive salt used separately.

Remarks

Applicant notes the Office Action corresponding to Paper No. 20060323. This amendment is submitted to be fully responsive thereto. By way of this amendment, claims 1-3 and 5 have been amended, and claims 15-21 canceled.

Claim 1 has been amended consistent with Applicant's election as part of a response to a restriction requirement to include the additive salt being a combination including at least bis(oxalato) borate and oxalyldifluoroborate. Support for the amendments to claim 1 is found in original claim 3 as filed as well as specification text of paragraph [0018].

Support for the amendments to claim 3 denoting bis(oxalato) borate and oxalyldifluoroborate as lithium salts is found in the specification as filed at paragraph [0032].

Support for the amendments to claim 5 with respect to the quantity of lithium bis(oxalato) borate being present from 0.5 to 5 mole percent is found in the specification as filed inter alia at Table 1 of page 17. As such, it is submitted that no new matter has been added to the application by way of these amendments.

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Reconsideration and examination of non-elected species claims 5, 9-12 and 14 is respectfully requested in light of the amendments to claim 1, rendering the base claim generic.

Claims 1-4, 6-8 and 13 were rejected under 35 U.S.C. §112, second paragraph, in regard to perceived ambiguity as to the nature of electrolyte salt and the additive salt combination. Claims 1-4, 6-8 and 13 were also rejected under 35 U.S.C. §103(a) over U.S. Patent No. 6,783,896 (Tsujioka) in view of U.S. Patent No. 6,506,516 (Wietelmann). Lastly, claims 1-4, 6-8 and 13 were rejected under 35 U.S.C. §102(e) as anticipated by Tsujioka.

Remarks Directed to Claim Rejections under 35 U.S.C. §112, Second Paragraph

The basis of this rejection is that additive salts lithium bis(oxalato) borate and lithium oxalyldifluoroborate are recognized in claim 4 as also being suitable as alkali metal electrolyte salts. The amendments to claim 1 reciting with greater clarity that the additive salt combination includes both bis(oxalato) borate and oxalyldifluoroborate is submitted to address the basis for this rejection. As the other electrolyte salts recited in the Markush group of claim 4 are all known salts (see paragraph [0031]), any ambiguity between claims 1 and 4 is submitted to have been satisfied by way of this amendment. Namely, the choice of either lithium bis(oxalato) borate or lithium oxalyldifluoroborate in claim 4 thereby renders the salt mixture of claim 1 a combination of only these two salts. In light of the above amendments and remarks, reconsideration and withdrawal of the claim rejections under 35 U.S.C. §112, second paragraph, is hereby requested.

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Remarks Directed to Rejection of Claims 1-4, 6-8 and 13 under 35 U.S.C. §103(a) over
Tsujioka in View of Wietelmann

The basis of the rejection is that Tsujioka teaches the additive salt lithium oxalyldifluoroborate as part of a battery electrolyte. Wietelmann is cited to bolster the teachings of Tsujioka with regard to the teaching of lithium bis(oxalato) borate. The rejection states:

Therefore in the absence of any criticality of the elected mixture [bis(oxalato) borate and oxalyldifluoroborate] compared to either of the separate additive salt materials themselves and since each individual salt additive is used for the same purpose, it is established that providing a mixture of the two combination would have been readily apparent to one of ordinary skill in the art, absent clear evidence to the contrary.

(Paper No. 20060323, page 6, last paragraph).

In response to this rejection, as an initial matter Applicant affirms that the subject matter of the various pending claims was commonly owned at the time that the various claimed inventions were made. Applicant submits that the attached declaration of Dr. T. Richard Jow makes clear that the mixture of bis(oxalato) borate and oxalyldifluoroborate increases the utilization of electrode active materials while retaining rate capability and low temperature performance of a pure oxalyldifluoroborate additive in the context of a lithium battery

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electrolyte. As such, it is submitted that the subject matter of the pending claims represents a surprising result that would not have been obvious to one of ordinary skill in the art upon reviewing the teachings of Tsujioka or Wietelmann, alone or in combination. As improved performance of the claimed salt mixtures is neither taught nor contemplated in the prior art of record, this is submitted to be a sufficient basis for overcoming a *prima facie* case of obviousness. *Gillette Co. v. S.C. Johnson & Son, Inc.*, 919 F.2d 720, 16 USPQ2d 1923 (Fed. Cir. 1990).

In light of the above amendments and remarks, as well as the attached declaration, reconsideration and withdrawal as to the rejection of claims 1-4, 6-8 and 13 is requested.

Remarks Directed to Rejection of Claims 1-4, 6-8 and 13 under 35 U.S.C. §102(e) as

Anticipated by Tsujioka

Anticipation has always been held to require absolute identity between the teachings of a single reference and the recitation of a claim. As pending claim 1 from which the other claims are dependent includes a recitation of additive salt combination including at least bis(oxalato) borate and oxalyldifluoroborate, the pending claims are submitted to not be anticipated by Tsujioka. Applicant submits that support for the novelty of the pending claims over Tsujioka is found in the outstanding Office Action on page 6, first paragraph, which reads "Tsujioka does not explicitly disclose the elected combination of $\text{LiB}(\text{C}_2\text{O}_4)$ and $\text{LiBF}_2\text{C}_2\text{O}_4$ additive salt mixture and PE-EC-EMC solvent mixture."

In light of the above amendments to claim 1 and the limitations of Tsujioka detailed in Paper No. 20060323, page 6, reconsideration and withdrawal of the rejection as to pending claims 1-4, 6-8 and 13 under 35 U.S.C. §102(c) over Tsujioka is requested.

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Summary

Claims 1-14 remain pending in the application. By way of this amendment claims 1-3 and 5 have been amended. Based on the amendments to claim 1, consideration of non-elected species claims 5, 9-12 and 14 is respectfully requested on the basis that these now depend from a generic independent claim. Should the Examiner have any suggestions as to how to improve the form of the pending claims, he is respectfully requested to contact the undersigned attorney in charge of this application to resolve any outstanding issues.

Please charge the fees and any costs for this Amendment and A Two Month Extension of Time request to the U.S. Patent Office Deposit Account number 19-2201 for the U.S. Army Materiel Command. Any deficiency or overpayment should be charged or credited to this numbered Deposit Account.

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William Randolph
Patent Attorney, Reg. No. 28,986
U.S. Army Materiel Command
9301 Chapck Road
Fort Belvoir, VA 22060-5527

Telephone (703) 806-8254